

Remarks

Following the above amendments, claims 1, 4-8, and 16, 17, 19-23 are pending in this application. By the amendments set out above, claims 18 and 24-27 have been cancelled. Claims 2, 3, and 9-15 were cancelled in response to a previous office action.

The remaining claims, including remaining independent claims 1, 16, and 22, have each been rejected under 35 U.S.C. § 103(a) as being obvious over the combination of Tyner et al. (U.S. Patent No. 6,272,618) or Goodman et al. (U.S. Patent No. 6,282,601) in view of Smith et al. (U.S. Patent No. 3,643,227) or Inoue (U.S. Patent No. 4,954,945). In addition claims 22 and 23 have been rejected under 35 U.S.C. § 112 as being indefinite.

A. Independent Claims 1, 16, and 22

Each of the independent claims has been rejected as being obvious. Applicants submit that each of the independent claims, as amended, sets out an invention that is patentably distinct from any of the asserted prior art, including any combination of Goodman, Tyner, Smith or Inoue. Importantly, the claimed inventions are directed to methods for handling system management interrupts in which multiple processors of the multiprocessor computer system are operable to handle or process the system management interrupt. This significant distinction is not described or even suggested by any of the asserted prior art. Indeed, the only reference asserted by the examiner that discloses the concept of a computer system in which a processor is operable to handle a system management interrupt — Goodman — assumes that all system management interrupts will be handled by a *dedicated* processor.

Each independent claim includes a selecting step in which a processor is selected among the multiple processors operable to handle a system management interrupt. Claim 1, for example, is directed to a method for handling system management interrupts in a multiprocessor

system and includes a selecting step in which a second processor is selected as a system management interrupt handler “from among the multiple processors operable to process a system management interrupt.” Similarly, claim 16 is directed to a “method for handling system management interrupt” and the claim includes a selection step in which a second processor is selected “from the set of processors operable to handle software system management interrupts as the system management interrupt handler.” Finally, claim 22, which is directed to a “method for handling a system management interrupt,” includes the step of “selecting a designated processor from among a set of processors capable of operating as a system management interrupt handler.” The limitation of selecting a processor for handling the system management interrupt from among a set of capable processors is simply not shown or suggested by any combination of Goodman, Tyner, Smith, or Inoue.

Applicants submit that a prima facie case of obviousness has not been established and that a rejection of the pending claims on obviousness grounds is improper. A prima facie case of obviousness requires a showing that all of the claim limitations of the rejected claims are taught or suggested by the prior art. Manual of Patent Examining Procedure 2143 and 2143.03. The establishment of a prima facie case of obviousness requires that *all* the claim limitations be taught or suggested by the prior art. MPEP 2143.01 (emphasis added). “All words of a claim must be considered in judging the patentability of that claim against the prior art.” *In re Wilson*, 424 F.2d 1382, 1385, 165 U.S.P.Q. 494, 496 (CCPA 1970). Here, because all of the elements of the independent claims, including the ability of the computer system to select among *multiple* processors operable to handle a system management interrupt, are not taught or suggested by the prior art combination identified by the examiner, a prima facie case of obviousness cannot be established and the rejection of these claims should be withdrawn.

1. Goodman

Goodman does not disclose selecting a processor for handling the system management interrupt from a set of capable processors. Goodman, in contrast, assumes that all system management interrupts will be handled by a single, dedicated processor. Goodman carefully and clearly explains that only the “boot processor” (processor 12a of Figure 1 of Goodman) is able to serve as the system management interrupt handler:

Although each of the processors 12 accepts the SMI, only the boot processor (e.g., system processor 12a) executes an SMI handler to service the SMI

(Goodman, column 4, lines 56-58). Goodman does not disclose or even suggest a method for handling system management interrupts in which a selection is made among the multiple processors that are operable to handle the system management interrupt. In Goodman, “only the boot processor” can handle the system management interrupt.

The claimed invention is patentably distinct from Goodman and the remainder of the cited prior art. The claimed invention is directed to a technique in which multiple processors of the computer system are operable to handle the system management interrupts. This element of the claimed invention is not disclosed or suggested by the prior art.

2. Tyner

Tyner describes a multiprocessor computer system wherein the computer performs a “find processor” routine to determine which processor caused the interrupt. (See Tyner at col. 4, line 29-34, Figure 2 and step 120). Applicants respectfully submit that the examiner is incorrect in his assertion that the “find processor” routine (step 120) of Tyner is used for the purpose of selecting a processor for the handling of the system management interrupt. The “find processor” routine of Tyner is not used for selecting a processor for the handling of a

system management interrupt; the “find processor” routine of Tyner locates the processor that caused the system management interrupt:

“[E]xecution proceeds to 120 where the computer performs a FIND PROCESSOR routine. The FIND PROCESSOR routine 120 determines which processor (12a or 12b) caused the SMI.

(Tyner, column 4, lines 31-34). A plain reading of Tyner reveals that the “find processor” routine of Tyner is not involved in locating a processor to handle the system management interrupt. Rather, this routine identifies the processor that issues the system management interrupt. Like Goodman, Tyner does not disclose a method for selecting a processor for handling a system management interrupt from a set of processors capable of doing so.

3. Smith and Inoue

The Examiner recognizes that “[n]either Tyner nor Goodman explicitly discloses or teaches selecting a designated SMI processor according to an arbitration scheme. It should also be recognized that neither Tyner nor Goodman discloses or teaches selecting from among a set of processors operable to handle a system management interrupt. Neither Smith nor Inoue cures this deficiency. Neither Smith nor Inoue in any manner concerns system management interrupts or a computer system in which multiple processors are each able to handle a system management interrupt.

4. Goodman Teaches Away From the Claimed Invention

There is no suggestion within the asserted prior art for modifying Goodman or Tyner to include multiple processors that are operable to handle a system management interrupt.¹ Goodman expressly provides that all system management interrupts are to be handled by a *single*,

¹ Tyner is not discussed in this Section A.4, as it is plain from the discussion above that the Examiner has misunderstood Tyner. Aside from the misunderstood and misquoted portion of Tyner (step 120 at column 4, lines 31-34), the Examiner has not identified any teaching in Tyner in which a processor is selected for the handling of a system management interrupt.

dedicated processor. Considering Goodman's express teaching that "only the boot processor" is operable to handle a system management interrupt (column 4, line 57), Goodman itself teaches away from the combination suggested by the examiners, rendering the combination of Goodman and either Smith or Inoue impermissible.

It is improper to combine references where the references teach away from their combination. *In re Grasselli*, 713 F.2d 731 (Fed. Cir. 1983). MPEP 2145. Here, Goodman plainly discloses that "only the boot processor" is to be involved in handling the system management interrupt. Modifying Goodman such that multiple processors of the modified reference are able to handle the system management interrupt would result in distortion of Goodman that is contrary to the teachings of Goodman and necessarily raises the impermissible use of hindsight reasoning on the part of the patent examiner. Nowhere does Goodman suggest that multiple processors could be used to handle system management interrupts. To the contrary, Goodman states that "only the boot processor" is to be used for that task. Goodman thus necessarily includes a well-developed teaching ("only the boot processor") that is directly contrary to the claimed invention, which involves a selection among multiple processors operable to handle a system management interrupt. Any modification of Goodman to provide for the provision of multiple processors operable to handle a system management interrupt would be contrary to the plain and persuasive teachings of Goodman. Goodman, therefore, cannot serve as a basis for a *prima facie* case of obviousness for the amended claims, and any combination of Goodman with Smith or Inoue for the sake of an obviousness rejection is impermissible. *See* MPEP 2145 (discussing in Parts X.A. and X.D. the inability of using hindsight to combine references or using that references that teach away from the proposed combination).

Applicants respectfully submit that the combination of Goodman, Tyner, Smith, and Inoue do not disclose or suggest invention of the amended claims of the present application, including the limitation of each of the independent claims directed to a selecting step in which the selection is made from a set of processors operable to handle the system management interrupt. Applicants request that the rejection of these claims on obviousness grounds be withdrawn.

B. Dependent claims 4-8, 17, 19, and 23

Dependent claims 4-8, 17, 19, and 23 will not be discussed individually herein, as each of these claims depends, either directly or indirectly, from an otherwise allowable base claim.

C. Amendments to Cure Rejections under Section 112

Claims 22 and 23 have been rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicants regard as the invention. In the office action at issue, the Examiner provides the basis for rejecting these claims. Applicants have amended claims 22 and 23 in accordance with the requirements of Section 112. Applicants submit that these amended claims resolve the indefiniteness issues raised by the Examiner in the pending office action and request that the rejection of these claims on indefiniteness grounds be withdrawn.

Conclusion

The applicants respectfully submit that the pending claims 1, 4-8, and 16, 17, 19-23 of the present invention, as amended, are allowable. The applicants respectfully request that the rejection of the pending claims be withdrawn and that these claims be passed to issuance.

Respectfully submitted,



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Date: June 14, 2004